

WHAT IS CLAIMED IS:

1. A probe card transporting apparatus configured to transport a probe card with a card holder between a first predetermined position L1 set in a prober chamber and a second predetermined position set outside the prober chamber, the probe card transporting apparatus comprising:
  - a first positioning fitting tool arranged at the first predetermined position in the prober chamber;
  - 10 a transfer mechanism configured to carry the probe card with the card holder between a transfer position set in the prober chamber and the second predetermined position outside the prober chamber and to transfer the probe card with the card holder at the respective
  - 15 predetermined positions, the card holder including a first positioning to-be-connected tool and a second positioning to-be-connected tool; and
  - a support carrying mechanism configured to carry the probe card with the card holder between the
  - 20 transfer position in the prober chamber and the first predetermined position in the prober chamber, the support carrying mechanism including:
    - a support configured to place thereon and support the probe card with the card holder;
    - 25 a second positioning fitting tool attached to the support through a swingable support mechanism; and
    - a support moving mechanism configured to move

the support in X, Y, Z, and  $\theta$  directions, the support moving mechanism serving to carry the probe card with the card holder between the transfer position and the first predetermined position in the prober chamber,

5            wherein the probe card with the card holder which is carried by the support moving mechanism is positioned at the first predetermined position in the probe chamber when the first positioning to-be-fitted tool of the probe card with the card holder fits with  
10           the first positioning fitting tool.

2. A probe card transporting apparatus according to claim 1, wherein:

          the first positioning fitting tool and the second positioning fitting tool comprise a first positioning  
15           pin and a second positioning pin, respectively;

          the first positioning to-be-fitted tool and the second positioning to-be-fitted tool comprise a first opening and a second opening, respectively;

          a top of the second positioning pin is  
20           substantially spherical at least partly; and

          the second positioning pin is attached to the support through the swingable support mechanism.

3. A probe card transporting apparatus according to claim 2, wherein the swingable support mechanism  
25           comprises a leaf spring.

4. A probe card transporting apparatus according to claim 3, wherein the swingable support mechanism

further comprises means for limiting a tilting angle of the second positioning pin.

5        5. A probe card transporting apparatus according to claim 3, wherein the leaf spring of the swingable support mechanism comprises a plurality of slits.

6. A probe card transporting apparatus according to claim 5, wherein said plurality of slits comprise a plurality of arcuate slits arranged substantially concentrically and having different diameters.

10        7. A to-be-connected body carrying mechanism configured to carry a to-be-connected body to a predetermined position set on a connecting body, the to-be-connected body carrying mechanism comprising:  
a positioning to-be-fitted tool provided to the  
15 to-be-connected body;

a support configured to place thereon and hold the to-be-connected body;

a positioning fitting tool attached to the support through a swingable support mechanism, wherein the  
20 positioning fitting tool serving to fit with the positioning to-be-fitted tool of the to-be-connected body, so that the to-be-connected body is positioned on the support; and

a support moving mechanism configured to move the  
25 support in X, Y, Z, and  $\theta$  directions.

8. A to-be-connected body carrying mechanism according to claim 7, wherein

the positioning fitting tool comprises  
a positioning pin;

a top of the positioning pin is substantially  
spherical at least partly; and

5 the positioning to-be-fitted tool comprises  
an opening.

9. A to-be-connected body carrying mechanism  
according to claim 7, wherein the swingable support  
mechanism comprises a leaf spring.

10 10. A to-be-connected body carrying mechanism  
according to claim 9, wherein the swingable support  
mechanism comprises means for limiting a tilting angle  
of the positioning pin.

11. A to-be-connected body carrying mechanism  
15 according to claim 9, wherein the leaf spring comprises  
a plurality of slits.

12. A to-be-connected body carrying mechanism  
according to claim 11, wherein said plurality of slits  
comprise arcuate slits arranged substantially  
20 concentrically and having different diameters.